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Anomalous magnetization in $CeTe_2$ *

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We have obtained the good stoichiometric single crystal of $CeTe_2$ by self-fluxed(Te) Bridgeman method. It crystallizes to form the layered tetragonal structure of Cu_2Sb-type. In the previous results, it exhibited the ferrimagnetic behavior at neutron diffraction, antiferromagnetic one at magnetic susceptibility and ferromagnetic one at field induced magnetization. We have carefully measured the magnetic susceptibility and magnetization of $CeTe_2$ under H$\perp$(ab)- and H$\parallel$(ab)-planes in order to investigate the complicated magnetic structures. The magnetization in H$\perp$(ab)-plane from 0 to 7T at 2K shows two different magnetic phases. But this phenomenon has not been shown other samples. Magnetic susceptibility above H=100Oe shows the antiferromagnetic and ferromagnetic behaviors at about 4 and 6K, respectively. The former disappears in lower fields than H=100Oe. However, the peak due to the former in the specific heat with H=0Oe exists and does scarcely change up to H=1000Oe. It shows that the ferromagnetic correlation is predominant more than antiferromagnetic one in low field. So, we consider that the complex magnetic behaviors in $CeTe_2$ are caused from the competition of ferromagnetic and antiferromagnetic correlations energy.

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